

I CLAIM:

1. A method of setting a value of a performance controlling parameter of a data processing apparatus operable to perform a processing operation upon at least one data block of an input data stream comprising a plurality of data blocks, said method comprising:

performing an initial processing stage of said processing operation on said at least one data block;

10 deriving from at least one result of said initial processing stage a complexity measure indicative of an amount of data processing required to perform at least one further processing stage of said processing operation upon said at least one data block;

setting said performance controlling parameter to a predicted value in dependence upon said complexity measure; and

15 performing said at least one further processing stage upon said at least one data block subject to said predicted value of said performance controlling parameter.

2. A method as claimed in claim 1, wherein said performance controlling parameter is at least one of a processor frequency and a processor operating voltage of said data processing apparatus.

3. A method as claimed in claim 1, wherein said complexity measure is also derived in dependence upon a result of a processing operation performed on at least one preceding data block of said input data stream.

25 4. A method as claimed in claim 3, wherein said result of said processing operation on said preceding data block is a processing time.

30 5. A method as claimed in claim 4, wherein said complexity measure is scaled in dependence upon said result of said processing operation on said preceding data block to derive a value for said performance controlling parameter.

6. A method as claimed in claim 1, wherein at least one of said plurality of data blocks of said input data stream comprises one of an image field and image frame.

7. A method as claimed in claim 6, wherein said complexity measure is derived from one or more features of an image rendering display list for said one of an image field and an image frame.

8. A method according to claim 5, wherein said one or more features used to derive said complexity measure comprises a count of constituent image items in said image rendering display list.

9. A method as claimed in claim 8, wherein said constituent image items are three dimensional graphics image elements.

15 10. A method as claimed in claim 8, wherein said performance controlling parameter is at least one of a processor frequency and a processor operating voltage of a graphics co-processor.

11. A method as claimed in claim 8, in which said image rendering display list is a display list generated by a deferred rendering graphics processor.

12. A method according to claim 7, wherein said one or more features used to derive said complexity measure include texture formats associated with said constituent image elements.

25 13. A method according to claim 7, wherein said one or more features used to derive said complexity measure comprises a screen resolution associated with said one of an image field and an image frame.

30 14. A method according to claim 7, wherein said one or more features used to derive said complexity measure comprises an estimator based on those ones of a group of graphics processing features that are enabled for said image field or frame.

15. A method according to claim 6, wherein said performance controlling parameter is set by estimating a number of memory accesses per said one of an image field and an image frame in view of said derived complexity measure.

5 16. A method as claimed in claim 6, wherein said one of an image field and an image frame is MPEG encoded and said complexity measure is a number of motion vectors required to decode said one of an image field and an image frame.

10 17. A method as claimed in claim 1, wherein said predicted value of said performance controlling parameter is selected from a predetermined range of parameter values.

15 18. A method as claimed in claim 17, wherein said predicted value of said performance controlling parameter is set in dependence upon at least one of a target processing time and a target power consumption level.

20 19. A method as claimed in claim 18, wherein when at least one of said target processing time and said target power consumption level cannot be met by setting said predicted value to be in said predetermined range, one or more inessential processing functions associated with said processing operation are disabled.

25 20. A computer program product bearing a computer program for setting a value of a performance controlling parameter of a data processing apparatus operable to perform a processing operation upon at least one data block of an input data stream comprising a plurality of data blocks, said computer program comprising:

initial processing code operable to an initial processing stage of said processing operation on said at least one data block;

30 complexity measure deriving code operable to derive from at least one result of said initial processing stage a complexity measure indicative of an amount of data processing required to perform at least one further processing stage of said processing operation upon said at least one data block;

performance setting code operable to set said performance controlling parameter to a predicted value in dependence upon said complexity measure; and

further processing code operable to perform said at least one further processing stage upon said at least one data block subject to said predicted value of
5 said performance controlling parameter.

21. A computer program product as claimed in claim 20, wherein said performance controlling parameter set by said performance setting code is at least one of a processor frequency and a processor operating voltage of said data processing apparatus.
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22. A computer program product as claimed in claim 20, wherein said complexity measure deriving code is operable to derive said complexity in dependence upon a result of a processing operation performed on at least one preceding data block of
15 said input data stream.

23. A computer program product as claimed in claim 22, wherein said result of said processing operation on said preceding data block used by said complexity measure deriving code to derive said complexity measure is a processing time.
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24. A computer program product as claimed in claim 23, wherein said complexity measure deriving code is operable to scale said complexity measure in dependence upon said result of said processing operation on said preceding data block to derive a value for said performance controlling parameter.
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25. A computer program product as claimed in claim 20, wherein at least one of said plurality of data blocks of said input data stream comprises one of an image field and image frame.

30 26. A computer program product as claimed in claim 25, wherein said complexity measure deriving code is operable to derive said complexity measure from one or more features of an image rendering display list for said one of an image field and an image frame.

27. A computer program product as claimed in claim 26, wherein said one or more features used by said complexity measure deriving code to derive said complexity measure comprises a count of constituent image items in said image rendering display list.

28. A computer program product as claimed in claim 27, wherein said constituent image items are three dimensional graphics image elements.

10 29. A computer program product as claimed in claim 20, wherein said performance controlling parameter set by said performance setting code is at least one of a processor frequency and a processor operating voltage of a graphics co-processor.

15 30. A computer program product as claimed in claim 27, in which said image rendering display list used by said complexity measure deriving code is a display list generated by a deferred rendering graphics processor.

20 31. A computer program product as claimed in claim 20, wherein said one or more features used to derive said complexity measure include texture formats associated with said constituent image elements.

25 32. A computer program product as claimed in claim 26, wherein said one or more features used by said complexity measure deriving code to derive said complexity measure comprises a screen resolution associated with said one of an image field and an image frame.

30 33. A computer program product as claimed in claim 26, wherein said one or more features used by said complexity measure deriving code to derive said complexity measure comprises an estimator based on those ones of a group of graphics processing features that are enabled for said image field or frame.

34. A computer program product as claimed in claim 26, wherein said performance setting code is operable to set said performance controlling parameter by estimating a number of memory accesses per said one of an image field and an image frame in view of said derived complexity measure.

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35 A computer program product as claimed in claim 26, wherein said one of an image field and an image frame is MPEG encoded and said complexity measure is a number of motion vectors required to decode said one of an image field and an image frame.

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36. A computer program product as claimed in claims 20, wherein said performance setting code is operable to select said predicted value is selected from a predetermined range of parameter values.

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37. A computer program product as claimed in claim 36, wherein said predicted value is set in dependence upon at least one of a target processing time and a target power consumption level.

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38. A computer program product as claimed in claim 37, wherein when at least one of said target processing time and said target power consumption level cannot be met by setting said predicted value to be in said predetermined range, one or more inessential processing functions associated with said processing operation are disabled.

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39. A data processing apparatus operable to set a value of a performance controlling parameter of a data processing apparatus operable to perform a processing operation upon at least one data block of an input data stream comprising a plurality of data blocks, said apparatus comprising:

initial processing logic operable to an initial processing stage of said processing operation on said at least one data block;

complexity measure deriving logic operable to derive from at least one result of said initial processing stage a complexity measure indicative of an amount of data

processing required to perform at least one further processing stage of said processing operation upon said at least one data block;

performance setting logic operable to set said performance controlling parameter to a predicted value in dependence upon said complexity measure; and

5 further processing logic operable to perform said at least one further processing stage upon said at least one data block subject to said predicted value of said performance controlling parameter.

40. A data processing apparatus as claimed in claim 39, wherein said 10 performance controlling parameter set by said performance setting logic is at least one of a processor frequency and a processor operating voltage of said data processing apparatus.

41. A data processing apparatus as claimed in claim 39, wherein said 15 complexity measure deriving logic is operable to derive said complexity in dependence upon a result of a processing operation performed on at least one preceding data block of said input data stream.

42. A data processing apparatus as claimed in claim 41, wherein said 20 result of said processing operation on said preceding data block used by said complexity measure deriving logic to derive said complexity measure is a processing time.

43. A data processing apparatus as claimed in claim 42, wherein said 25 complexity measure deriving logic is operable to scale said complexity measure in dependence upon said result of said processing operation on said preceding data block to derive a value for said performance controlling parameter.

44. A data processing apparatus as claimed in claim 39, wherein at least one of 30 said plurality of data blocks of said input data stream comprises one of an image field and image frame.

45. A data processing apparatus as claimed in claim 44, wherein said complexity measure deriving logic is operable to derive said complexity measure from one or

more features of an image rendering display list for said one of an image field and an image frame.

46. A data processing apparatus as claimed in claim 35, wherein said one or more features used by said complexity measure deriving logic to derive said complexity measure comprises a count of constituent image items in said image rendering display list.

47. A data processing apparatus as claimed in claim 46, wherein said constituent image items are three dimensional graphics image elements.

48. A data processing apparatus as claimed in claim 39, wherein said performance controlling parameter set by said performance setting logic is at least one of a processor frequency and a processor operating voltage of a graphics co-processor.

49. A data processing apparatus as claimed in claim 46, in which said image rendering display list used by said complexity measure deriving logic is a display list generated by a deferred rendering graphics processor.

50. A data processing apparatus as claimed in claim 39, wherein said one or more features used to derive said complexity measure include texture formats associated with said constituent image elements.

51. A data processing apparatus as claimed in claim 45, wherein said one or more features used by said complexity measure deriving logic to derive said complexity measure comprises a screen resolution associated with said one of an image field and an image frame.

52. A data processing apparatus as claimed in claim 45, wherein said one or more features used by said complexity measure deriving logic to derive said complexity measure comprises an estimator based on those ones of a group of graphics processing features that are enabled for said image field or frame.

53. A data processing apparatus as claimed in claim 45, wherein said performance setting logic is operable to set said performance controlling parameter by estimating a number of memory accesses per said one of an image field and an image frame in view of said derived complexity measure.

54. A data processing apparatus as claimed in claim 45, wherein said one of an image field and an image frame is MPEG encoded and said complexity measure is a number of motion vectors required to decode said one of an image field and an image frame.

10 55. A data processing apparatus as claimed in claim 39, wherein said performance setting logic is operable to select said predicted value of said performance controlling parameter from a predetermined range of parameter values.

15 56. A data processing apparatus as claimed in claim 55, wherein said predicted value is set in dependence upon at least one of a target processing time and a target power consumption level.

20 57. A data processing apparatus as claimed in claim 56, wherein when at least one of said target processing time and said target power consumption level cannot be met by setting said predicted value to be in said predetermined range, one or more inessential processing functions associated with said processing operation are disabled.